

Britain does still design some good products. Where the UK falls down is in expecting these products to sell themselves against the selling craft of its competitors.

To get out of the position we now find ourselves in (no company cars, no commission etc.), we can find no solace in MinTech, 'P.Eng.' or 'C.Eng.'. Before we British engineers can resume our place in the hierarchy (and how did architects ever hang on to theirs?), we must be seen to be relevant to our gross national product.

This will not happen while that product is becoming increasingly dependent on foreign designs, either by licences or because of UK manufacturing outlets for mainly US companies. It is my view that one reason at least for this purchase of foreign designs is timidity in the guise of risk minimisation. This timidity will get more widespread until and unless risky products can be allowed to reap fat profits if the gamble pays off. It is at this company level that taxation is all wrong, and engineers must either work to change the British Government or work to change its ideas. Even the Government must realise that it is no use turning out more scientists and engineers into a sterile pasture. Why not 'phase out' MinTech and 'phase back' the profit motive?—Yours faithfully,

J. BAULDREAY

'Hickory Lodge', Heathfield, Royston, Herts.  
8th October 1968

## Installation problems

Dear Sir—I am engaged in the comprehensive electrical testing of petrol service stations, works installations etc. May I appeal to the electrical-installation designers to specify double-pole switching of each single-phase circuit at the main miniature-circuit-breaker switchboard; otherwise, interconnection at the neutral bar necessitates shutting down the installation to trace a 'low' result; regulation A24 is seldom complied with, and is impracticable with a large number of subcircuit neutrals in most cases.

Recently, I had to take out 36 subcircuit neutrals to find a 'low' one; the plant was off for two hours. Plant owners dislike having to switch off, just for a 'test'. If periodic testing is insisted on by the regulations, modern installations should be designed to facilitate this in every respect. Another hazard, in practice, on a 3-phase board is the risk of feedback.—Yours faithfully,

J. H. LONGHORN

9 Foxlands Avenue, Penn  
Wolverhampton, Staffs.  
20th September 1968

## Marconi and Preece

Dear Sir—I read R. J. Halsey's article on the history of the British telecommunication industry (Sept. 1968 *E & P*, p. 354) with considerable interest, but I was sorry to see that he repeated the fallacy that 'Preece made no mistake . . . but welcomed Marconi and gave full collaboration'. This statement is very far from the truth; Marconi had, in fact, been in Great Britain for more than a year before Preece appreciated the potentiality of radiotelegraphy. There is a tendency to overemphasise the importance of the British Post Office in the early months of radio development. The Royal Engineers

and the Royal Navy were the most important influences in Marconi's work during 1896 and 1897.

The first person to see Marconi's apparatus demonstrated in Great Britain was A. A. Campbell-Swinton, late in March 1896. Campbell-Swinton gave Marconi a letter of introduction to Preece, then Engineer-in-Chief to the GPO, but Marconi did not avail himself of this introduction for several months. Instead, he wrote to the War Office, offering the use of his Hertzian wave system for the remote control of torpedoes (which must surely be the first proposal for a radio-guided missile!). Despite the rather unorthodox nature of this proposal, an experienced torpedo officer, Maj. C. Penrose, R.E., was sent to study the Marconi system, and reported that the torpedo needed considerable further development to be a practicable weapon, but that the wireless telegraph showed promise of meeting the Army's need for a portable signalling equipment.

Marconi's first approach to the Post Office was made late in July 1896, when the well known transmission between the roof of the GPO building and the roof of the Savings Bank in Knightbridge Street took place. But, although Preece received Marconi courteously, he was to describe his apparatus as 'home-made and somewhat crude appliances' in later years.

The fighting services, however, took Marconi more seriously, and arranged for their representatives to attend Marconi's first outdoor demonstration on Salisbury Plain during the first two weeks of September 1896. Marconi transmitted signals over a range of two miles, which caused Penrose to report that radiotelegraphy was 'capable of considerable further development without the apparatus becoming too cumbersome for military purposes', while Capt. H. B. Jackson, R.N., considered that the Royal Navy would find that 'its adoption would be almost invaluable'.

While these favourable reports were being considered, Preece felt that Marconi's results were 'interesting but not encouraging', and, by referring to the Post Office's own wireless-telegraphy experiments, revealed that he still did not appreciate the essential difference between a magnetic inductive field and a true Hertzian wave. This confusion led him (and many other telegraph engineers of the period) to conclude that the poor performance of the Marconi system was incapable of much further improvement without the use of cumbersome equipment. He did, however, believe that radio might have a limited application for linking offshore lighthouses and lightships into the mainland telegraph system.

Shortly after the Salisbury Plain trials, Jackson wrote to Marconi, sending details of the features of a radio system which would meet the Royal Navy's requirements. Marconi modified his equipment to meet these requirements; the principal change was the substitution of an elevated, non-directional aerial for the parabolic copper reflectors used on Salisbury Plain. These directional reflectors were a vital part of the lighthouse system visualised by Preece, but they were not used in further experiments by Marconi until 1916; there is little evidence here of much Post Office influence in Marconi's work! The GPO, on the other hand, still thought mainly in terms of directional transmissions, and used the reflector system in their only important radio trial of 1897.

The above account suggests that the Post Office played a much smaller part in

the early development of radio than is commonly acknowledged. The general lines of progress were, in fact, dictated by the Army's needs until September 1896 and by the Royal Navy (in particular by Jackson) from then until December 1899. The only real contribution by the GPO was the provision of laboratory facilities and a certain amount of technical help by their engineers. There was no financial assistance of any kind. Preece appears to have provided these facilities because he was shrewd enough to want to have any new telegraph system 'under his eye'; he also seems to have formed a personal friendship with the young Italian engineer which has been misinterpreted as an enthusiasm for Marconi's telegraph system. This unofficial assistance was encouraged by the fighting services as a way of avoiding the embarrassment which could have attended the provision of facilities to a foreigner for the development of a secret signalling system (all the early experiments were classified as confidential).—Yours faithfully,

ROWLAND F. POCOCK

39 Brackens Lane, Alvaston  
Derby DE2 0AQ  
13th September 1968

## References

- CAMPBELL-SWINTON, A. A.: Letter to W. H. PREECE, 30th March 1896
- MARCONI, G.: Letter to the British Secretary of State for War, 20th May 1896
- Report by Engineer-in-Chief of the British Post Office on the technical aspects of wireless telegraphy (HMSO, 1903)
- Report of Maj. C. Penrose and Maj. Carr to Inspector-General of Ordnance, 31st August 1896
- Report of Capt. H. B. Jackson to Commander-in-Chief, Devonport, 16th September 1896
- PREECE, W. H.: Comment on report of H. R. Kempe to Engineer-in-Chief of the British Post Office, September 1896
- JACKSON, H. B.: Letter to G. Marconi, 15th September (presumably 1896)
- POCOCK, R. F.: 'The radio experiments of Sir William Preece', *Soc. Engrs. J.*, 1965, 56, p. 141
- GRAHAM, J. C.: Letter to G. Marconi, 19th April 1897

The above documents will be found, in the main, in the British Public Record Office files, ref. ADM116/523 and WO3/2989(84/M/3975), the Post Office archives, files ENG26411/1903 and ENG23109/1896, and the Marconi Co. file HIS63. Thanks are due to the representatives of all these organisations for allowing me access to these and other documents of the period. They often went to considerable trouble to find an obscure letter or report to confirm a doubtful point.

[R. J. Halsey writes: Mr. Pocock's assessment of Preece's collaboration with Marconi is interesting, but contrary to general acceptance. Preece might well have been unable, at the time, to distinguish clearly between Marconi's system and that using electromagnetic induction (equally legitimately 'wireless') which he had, himself, pioneered. It could also be true that, on Salisbury Plain, Service observers were better able than Preece to judge the importance of Marconi's demonstrations; but it was one of Preece's engineers who proposed the use of simple elevated wires as more suitable for shipboard use than 'elevated capacities'. Also, it is surely obvious that, without disrespect, Marconi's apparatus was 'home-made and somewhat crude'. But none of these matters is crucial to the point at issue.

J. E. Taylor, who was intimately involved, has stated that Marconi first wrote to Preece in May 1896 and that the GPO rooftop demonstrations started in June. He says: 'Recognising the probable utility of Marconi's proposals . . . Preece quickly decided on thoroughly proving its (sic) capabilities in a series of trials. To his prompt and decisive action . . . and the timely assistance rendered to Marconi at this critical stage . . .'

If GPO evidence is suspect of bias, the

Marconi Co.'s booklet 'Chapters of Marconi history' states that 'Preece, with commendable promptitude and unselfishness, gave . . . every encouragement and support by the technical resources of his department', and 'In later years Marconi never ceased to acknowledge his debt . . . to Preece'.

In 'My father, Marconi', his daughter Degna says 'Preece was a staunch colleague in the days ahead. He offered Marconi the use of his own laboratory. . . . Moreover, he allowed his protégé to annex one of his most valuable assistants', and 'In Preece, Marconi always had a stalwart supporter who fought his private battles and also defended him publicly'.

Further quotations would be tedious; Mr. Pocock will have to make a much stronger case to upset the conclusion that GPO assistance was prompt and commendable, even if, in retrospect, it was less than it might have been. Financial assistance from Government departments to promising inventors was not a feature of those times.]

## Mailing of journals

Dear Sir—May I suggest that your comments on journal mailing (Sept. 1968 *E & P*, p. 353) could perhaps have been more pointed had you mentioned that the need to include two or three journals in most IEE postings makes it difficult to follow the practice of other bodies sending only one main journal together with just one or two loose inserts.

It is a complex problem, as I well know from the needs of commercial mailing shots, but, of course, it is only a minor side issue. Far more important is the problem of the superfluity of technical matter giving indigestion to everyone in the business today. I have counted the journals passing through my tray in the course of a month and added them up to 22, any of which could in some unlikely circumstance contain information of some value. Having a very full-time job, and in an effort to prevent other members of the staff from wasting time, most of these go straight into the wastepaper basket.

If some impartial body could assess the true value of 90% of the present-day technical journals, I feel sure that the results could be quite frightening; but let me hasten to add that the IEE journals are among the very few to receive interested scrutiny. Please take comfort from the fact that your readers are sufficiently interested to be critical of the method of packaging.—Yours faithfully,

J. H. MORGAN  
16 Meadow, Syston, Leics.  
20th September 1968

## The circuit-breaker story

Dear Sir—It is good to see R. T. Lythall's letter (Oct. 1968 *E & P*, p. 421) and to learn that he remembers help received from ERA in some tests made for him (*circa* 1940) into the possibilities of an 11 kV 150/250 MVA self-generated air-blast circuit breaker. May I take this opportunity of saying that, on my part, I have received much help from his splendid book outlining modern switchgear practice with its excellent arrangement of subject matter and its clear and instructive diagrams and illustrations. I am, however, sorry that he will not be able to add a section describing 'a new British design in which the air-blast takes place under oil', for he will have seen from the editorial note, following his letter, that the illustrations are of oil circuit breakers and not of air-blast types. I can assure him that had I been

given the opportunity, before publication, of seeing the illustrations you selected, his hopes of a new find in switchgear would not have been raised and then dashed so cruelly!

He and other readers, from all that the note tells them, may still be left wondering what is the relevance of illustrations of oil circuit breakers in the context of my article. However, I have now been told that, while the existing captions are correct as regards ratings, the rest of the wording of these captions should be replaced by: 'bulk oil circuit breakers incorporating the side-blast arc-control unit'.

I have now received correction slips to paste over the erroneous captions in my set of reprints, and I hope that you will take steps to make it easy for other readers of your excellent and usually accurate journal to correct this damaging error.

Before attempting a postscript to I. H. Child's amusingly sarcastic verse, may I refer to the note about the sale of 'Intercept' on behalf of the IEE Benevolent Fund that appeared under my name on the 'Contents' page of your September 1968 issue. I should like to make clear that the benefit of 5s. per copy is only available to the fund if purchases (at 13s. 6d. post free per copy) are made directly through the office of the fund at Savoy Place.

And now may I add my 'childlike' rueful rider:

*Oh, Mr. Editor, I've been woefully misled!  
The switch you fathered on me was not  
the type you said,  
And, thinking me the culprit, it blasted  
off my head,  
So now for a consultant I'm technically  
dead!*

Yours regretfully,

W. BEVAN WHITNEY  
Ower Quay, Corfe Castle, Wareham, Dorset  
9th October 1968

## Sixth-form projects

Dear Sir—Those of us teaching in schools are becoming increasingly and acutely aware of the gap (or perhaps we should say chasm) which exists between the normal school A level curriculum and the work of the professional engineer.

This situation is beginning to change as sixth formers are encouraged to attempt project work and to undertake work involving applications of their knowledge. I, and I am sure many other schoolmasters, find difficulty in maintaining an authentic engineering background to this work. This problem could be resolved if engineers were able to pass on to us some of the minor (solved or unsolved!) problems which must arise in their work. This could then lead to our students receiving the immense benefit of dialogue with active engineers in a realistic environment.

If anyone—either schoolmaster or engineer—feels able to assist in this matter, I should be delighted to hear from them.—Yours faithfully,

D. V. ATKINSON  
Science Department  
Royal Hospital School, Ipswich, Suff.  
26th September 1968

## The London Electrical Engineers

Dear Sir—The devotion of the late Lt. Col. R. H. Smith to the London Electrical Engineers, Territorial Army (*IEE News*, 26th August 1968, and June 1968 *E & P*, p. 239)

recalls the occasion of my first acquaintance with him.

Early in 1917, I was a member of a small antiaircraft searchlight detachment of the LEE sappers, stationed on Horsendon Hill, near Sudbury, Middx. Some pedant at the War Office at that time had apparently discovered that there was no prescribed drill laid down for the technical operation of antiaircraft searchlights and their generating plant. This, obviously, would never do; so a drill was accordingly promulgated through the usual channels, and in due course reached us. And, so that the drill would be quickly assimilated and put into effect, it was accompanied by an order that all (including local) leave was to be completely stopped until we had all been found proficient, by examination, in its knowledge and practical application.

Some of the items included in this drill were quite laughable. One of these announced that, on the command 'Take post', two of us would double to the engine room, and, after ascertaining that there was sufficient fuel and lubrication available, would start the oil engine by rotating the flywheel in a clockwise direction. There was a lot more in this vein, including detailed instructions of how one turned the handle of the shunt regulator and ascertained that the voltage had reached the correct figure before the arc was struck. All this, however, had to be learnt by heart, and, with much grumbling, we set about this task.

In due course, one morning a young second lieutenant, of the name of Smith, arrived on a motorbike, to assess our proficiency in the prescribed drill. I remember that it was a particularly wet and muddy day, as I distinctly recall that he had brown paper wrapped around his putties. After putting us through our paces, he pronounced (I fear with tongue in cheek) that we all knew the drill. Accordingly, that afternoon I was once again free to walk over the fields (still possible in those days) to nearby Wembley.

Incidentally, a few years ago, I revisited Horsendon Hill, and was able not only to locate the site of the searchlight station but also to find the concrete foundation block of the engine still *in situ*.—Yours faithfully,

R. H. RAWLL  
125 Westworth Road  
Harborne, Birmingham 17  
30th September 1968

## Top secret

Dear Sir—Is it possible that *Electronics & Power* and the other IEE journals are now being sent to readers in south-east England by stagecoach via the Scottish Highlands?

I have this morning received the October 1968 issues with the postmark 'Sept. 1968 Woking'.

It would be interesting to know what delays in receiving the journals are being experienced by other readers.—Yours faithfully,

C. C. BARNES  
24 Mead Crescent, Sutton, Surrey  
9th October 1968

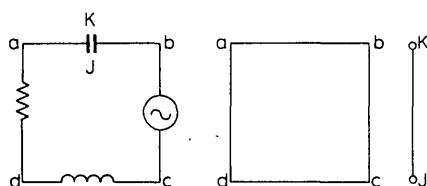
[The heavy floods in September in southern England helped to delay deliveries of proofs, blocks etc. to the printers, and held up the printing and delivery of the October 1968 journals. The fact that the wrappers had a September postmark is due to the Post Office procedure of franking the wrappers some time before the journals are actually wrapped, thereby saving time after the journals are printed.—Editor]

Inductor alternators were, however, extensively used in the maritime radio service, commencing, in about 1906, with the Telefunken quenched-gap, 'singing-spark' system. Their use (in conjunction with rectifiers) has continued, in this service, to this day for the reasons given by Dr. Lay under the heading 'electronic equipment'.—Yours faithfully,

W. L. E. MILLER  
7 Bittacy Close, Mill Hill, London NW7  
27th December 1968

## Phasor diagrams

Dear Sir—M. G. Scroggie suggests that having the same equation derived by using two different conventions might lead to some confusion (Jan. 1969 *E & P*, p. 26). This is certainly true for direct currents and voltages, but there should be no confusion as far as alternating quantities are concerned. One uses the conventions for deriving the equations—not for interpreting them.



Consider the following example (illustrated):  $V_{ab} = -jI_{JK}$ ;  $V_{bc} = V$  — the applied voltage;  $V_{cd} = jI_{JK}$ ; and  $V_{da} = I_{JK}$ . The interpretation is the same for both sets of conventions:

- the voltage  $ab$  lags the current  $JK$  by  $90^\circ$
- the voltage  $bc$  is  $180^\circ$  out of phase with the current  $JK$
- the voltage  $cd$  leads the current  $JK$  by  $90^\circ$
- the voltage  $da$  is in phase with the current  $JK$ .

Mr. Scroggie has probably added to the confusion by calling the kerb-drill convention unnatural. There can be nothing unnatural in adopting a convention which says that  $I_{JK}$  is positive when current flows from  $a$  to  $b$ ; it is merely convention.—Yours faithfully,

G. R. JONES  
The Polytechnic, 309 Regent Street  
London W1  
31st December 1968

Dear Sir—Good heavens, are there still people who are anti-Scroggie? Send them to the salt mines.—Yours faithfully,

G. LYON  
11 Tynedale Gardens, Stocksfield, Northumb.  
7th January 1969

## Academics and practicals

Dear Sir—Strange as the habit may seem, my initial interest on receiving *Power Record* is to glance through the names of the authors and the small print telling us who they are (or were) with. I do this because for some time I have been surprised and overpowered by the preponderance of papers from authors who are with universities, schools of technology, research associations and the like. For brevity, but with great respect, I will call them the 'academics', while authors associated with the manufacturing or supply industries I will call the 'practicals'.

Let me analyse the latest issue of *Power Record*. Here we find a total of 27 papers, of which 22 come from the academics, one from a joint effort (academic/practical), one from an industrial research laboratory and only three from '100%' practicals.

Normally I keep only papers which directly interest me, but I do happen to have the complete copy of the December 1955 *Proceedings IEE* (part A—power engineering). How things have changed may be judged by the fact that, out of a total of 12 papers in that issue, the practicals claim ten, the academics only one and someone not with anyone the other.

In my younger days, papers by the practicals came thick and fast, and mighty interesting they were. There must be many 'old boys' like me who regret their absence today, and many young engineers who could benefit from more of them now.

What has happened to all the writers in industry? Surely they still exist and can write to tell the world what is happening on the practical side of power engineering. Or are they all too busy with productivity or metrication (horrible word!).

Not long ago, a popular song included the line 'Where have all the flowers gone?'. For 'flowers' please read 'authors (practical)'.—Yours faithfully,

R. T. LYTHALL  
'St. Albans', 58 Rodwell Road, Weymouth  
Dorset  
4th December 1968

## Marconi and Preece

Dear Sir—I would like to thank R. J. Halsey for the courtesy of his reply to my letter (Dec. 1968 *E & P*, pp. 492–493). Restricting my further comments to the main topic of the introduction of the Marconi system of radio into the United Kingdom (to avoid the side issues of other wireless systems and other inventors), I would agree with him that it is generally accepted that Preece was a major, if not the principal, figure in ensuring the ultimate acceptance of Marconi's apparatus. But general acceptance is not always the same thing as historical accuracy; it is, for example, generally accepted in the Soviet Union that Alesandr Popov 'invented' radio, but historians in other countries do not agree with this opinion. It is, however, obviously necessary for anyone who disagrees with a view that is generally accepted to be prepared to offer evidence in support of his interpretation of events.

However, popular opinions sometimes prove unfortunate when they are quoted as historical evidence. The conventional attitude about the Marconi–Preece relationship has been accepted uncritically by many historians, and it is not possible to regard the statements in most of the popular histories of radio as independent evidence of Preece's influence unless it can be shown that they all derive from separate original sources. It is also important to take the date and the documents available into account in assessing the completeness of any historical record: the files of the British fighting services and of the General Post Office were not, in general, released to students until 1950, and any author writing before that date is unlikely to have had access to the letters of all interested parties. For this reason, I feel that the popular view is not due to GPO bias but to the fact that engineers in the GPO service were not

aware of negotiations between the fighting services and Marconi.

If we rely on original sources, there are two strong pieces of evidence favouring the conventional view of the Preece–Marconi relationship: the provision of technical facilities and assistance from about July 1886 to May 1897, and the recommendation in Preece's report of the 15th July 1897 to the secretary of the GPO that the UK Government should spend up to £10000 in acquiring Marconi's patent rights. But these events were less important than they appear to be when considered in isolation.

Marconi's solicitor, J. C. Graham, advised him (19th April 1897) that the assistance he had received placed him under no obligation to the GPO, which suggests that it was on no very lavish scale; the proposed purchase of the patent was made not as a spontaneous gesture of confidence but only after the commercial value of radio had been demonstrated by a group of financiers, including Marconi's cousin Henry Jameson-Davies, who had offered £15000 for the same rights. Degna Paresce-Marconi's statement that Preece was 'always . . . a stalwart supporter' of her father is simply not true; there is no evidence that Preece made any objection to the break between the GPO and Marconi's company in 1897, and twice he formally stated (during a GPO inquiry of 1899 and again in evidence to a select committee of the House of Commons in 1903) that he did not consider the Marconi patent to be valid.

Taylor's evidence, too, is open to doubt. Marconi himself (in the unpublished *De Sousa* manuscript of his reminiscences, now in Marconi House) gives the date of the GPO rooftop transmission as the 27th July 1896, which agrees with the rather less precise indication in the GPO records of the period, but is over a month later than the date Taylor suggests. Maj. Penrose recommended further trials of the radio telegraph after a demonstration on the 18th June 1896; not only was this recommendation made before Preece had even seen the Marconi system, but it was made when the telegraph was not the principal object of Penrose's visit—he had officially been detailed to report on a remote-control torpedo.

I therefore see no reason to modify my opinion that the Royal Engineers was, in 1896, the public body which made the greatest contribution to the acceptance of the Marconi system. Penrose recognised its importance immediately; Preece was more cautious and, even as late as the 20th September 1896, 'proposed taking no further steps until the transfer of the telephone trunk lines to the Post Office had been completed', according to a GPO confidential report of 1904. This was commendable caution for a man in Preece's position, but it was very far from being prompt assistance for a young man who at that time had no income other than an allowance from his father. The only prospect of financial exploitation of his telegraph system which appeared to be open to Marconi during the crucial winter of 1896–97 was the hope of a contract from the British Army or the Royal Navy, and, as late as July 1897, Preece was able to say that Marconi 'has not been told that we regard his plan as even practicable'.

The invention of the aerial without elevated capacitances has been a subject of much controversy; it was used, unknowingly, by experimenters\* even before the days of Hertz. So far as shipborne aerials of

\* SÜSSKIND C.: 'The early history of electronics', *IEEE Spectrum*, 1968, p. 90

this kind are concerned, Capt. Jackson, at Devonport, had discovered the aerial principle in July 1896, before he learned that Marconi was working to the same end; and by the end of that year he had improved his signalling range from 50yd to 300yd by the expedient of adding vertical wires to his transmitter and receiver.† Jackson was discussing the importance of aerials without elevated capacitance in a letter to Marconi of the 22nd March 1897. There is no doubt that Jackson, and consequently the Royal Navy, would have adopted this feature of the radio telegraph even if outside assistance had not been available.

I must apologise for the large number of dates and quotations which I have included in my discussion, but I am confident that Mr. Halsey will agree that these are both vital if we are to arrive at the truth about any historical incident. Like him, I can, if necessary, produce further quotations to support my case from contemporary documents which usually received a 'Confidential' classification and were therefore not available to the general public or even to Civil Servants outside of their departments of origin.

However, I must include one last quotation from an individual who, if he were biased at all, must surely have been biased in favour of the GPO—W. H. Preece himself. I have already quoted his report of the 20th September 1896 on the Salisbury Plain trials as showing that he was not impressed by the performance of Marconi's equipment. This report concludes with the words '... it is amusing to find the War Department waking up to a system of signalling without wires which we have been working at for nearly ten years!' The last part of this quotation clearly refers to Preece's system of inductive telegraphy; equally clearly the first part refers to the Marconi system. Taking the sentence as a whole, it is obvious that, whatever the term 'general acceptance' may mean, Preece believed that Marconi was the British Army's protégé.—Yours faithfully,

ROWLAND F. POCOCK

39 Brackens Lane, Alvaston, Derby DE2 0AQ  
10th December 1968

[R. J. Halsey writes: Mr. Pocock recognises that he is challenging the generally accepted view of the Marconi-Preece relationship, to which both the Marconi family and the Marconi Co. subscribe. In the light of his interpretation of events, he is, of course, entitled to do this.]

Dear Sir—May I be allowed to add some personal recollections regarding the feelings of Marconi himself as recounted to me during a period in 1926 when I had unusually close and friendly contacts with him.

In 1926, I was appointed, with a nucleus of staff, the future officer in charge of Bodmin-Bridgwater beam station. The period from May to October was rather dramatic in that the expected communication to Canada failed (the reason need not concern this note) and led to extensive modifications to the aerial structures at Bodmin and Bridgwater and also, as a result, led to many visits to Bodmin (and Bridgwater) by Marconi.

As far as I can recall, Marconi made direct contact only to Franklin and myself, and, as Franklin was for most of the time

engrossed in the work resulting from the modifications, the result was that I spent many hours alone with Marconi.

It so happened that since the end of the First World War I had been engaged on pioneer work in the development of radio concerning field-strength measurement, frequency measurement, tuning-fork control of frequency (which led to the then recent control of the high-power transmitter at Rugby, War.) and, up to the time of my posting to Bodmin, the evaluation of the possibility of transatlantic radio-telephony.

Thus the filling of time, when we were together over these few months, ranged, on my part, over these matters to, I am sure, the interest of Marconi himself; and, on his part, among many other things, to his early days in Britain and to his experiments leading to the establishment of long-distance radiocommunication. There is no doubt in my mind, from all that from time to time Marconi said to me, that he deeply felt a high regard for all the assistance that he received, not only from Preece but also from the British Post Office, in general in forwarding his early work.

I may add, as an exemplification of the closeness of our relationship during this time, that I had the pleasure of lunching with him on his ship and of his taking tea with me at my hotel.—Yours faithfully,

F. E. NANCARROW

'Courtlee', 18 Thorne Park Road,  
Torquay, Devon  
30th January 1969

## CEI registration

Dear Sir—I have recently received my certificate of registration as a chartered engineer from the Council of Engineering Institutions. This certificate entitles me to use the style 'Chartered Engineer' and the initials 'C.Eng.', as I am a corporate member of the IERE. Having paid my £1 registration fee for this privilege, I thought that that was the end of the matter, but I was wrong. Two very important facts emerged from a close scrutiny of the registration card, which accompanied the certificate, and I wonder how many other people missed them at first sight.

First, the £1 registration fee is only the beginning. The registration as a chartered engineer is for a period of three years only, and not for the whole period of one's corporate membership of one of the constituent institutions. At the end of each 3-year period, one is called on to 'donate' a further £1 for renewal of the registration.

Secondly, it would appear that all of us who have used the descriptions 'Chartered Engineer' or 'C.Eng.' without having been registered with the CEI are in contravention of the regulations and bylaws thereof. Many of my colleagues, for example, are described as 'C.Eng.' in our college prospectus, and none of them is registered with the CEI.

One wonders what dire penalties are incurred when one uses the descriptions 'Chartered Engineer' and 'C.Eng.' without having previously registered with the CEI, or in the event of not re-registering after a 3-year period.

I was under the impression that the CEI was established to help professional engineers, but when it axed the HNC as a means to professional membership (a move many of us deplore), I began to have

my doubts. Now comes this registration bombshell. It does seem that the CEI is bent on hedging around the whole engineering sphere with petty regulations and bureaucratic red tape, which cost us all time and money that we could well spend more profitably. Is it not time we all refused to co-operate with these silly little nuisances, and simplified the whole business of institution membership rather than continually making it more complicated?

I look forward to reading what others have to say on this subject.—Yours faithfully,

J. M. HODGSON

Preston Grange, Ganwick, nr. Potters Bar  
Herts.

1st January 1969

[All corporate members of constituent institutions are registered by the CEI as chartered engineers, without payment or application by the members, and are entitled to use 'C.Eng.'. The fee to which Mr. Hodgson refers is for a certificate of registration and an identity card, which a member need not have unless he wants them. The initial fee for the certificate and card is £3; the triennial renewal fee for the card is £1.—Editor]

## Early filament lamps

Dear Sir—Older readers will recall handling the carbon- and tungsten-filament lamps described in B. Lightoller's article (Dec. 1968 *E & P*, p. 3). The caption under the first picture should be altered, as the carbon-filament lamp is on the left, and the dates do not tally with those given in Table I, which are more accurate.

I remember using a gas-filled lamp for a school stage show at Christmas in 1918, six years before the date (1924) of the example given in Table I. We used to call them 'half-watt lamps', as they were supposed to use  $\frac{1}{2}$ W per candle power, compared with 3W per candle power used by the carbon-filament lamps.—Yours faithfully,

F. R. DUNMAN

Grasmere, Molesey Road, Walton on Thames  
Surrey

30th December 1968

[We apologise for interchanging the carbon- and tungsten-filament lamps in the legend to the illustration on p. 3.—Editor]

Dear Sir—'Let there be light' by B. Lightoller (Jan 1969 *E & P*, p. 3) interested me very much.

When I started my apprenticeship 60 years ago, the carbon-filament lamp was 'king of the castle'! As Mr. Lightoller says, 16 candle-power lamps (taking  $\frac{1}{2}$ A at 230V) were usual; but 32 candle-power lamps were also available, as well as a special lamp for use as a radiator element! This was sausage-shaped, about 3in in diameter and 1ft high, 'frosted' on the outside, and provided with the usual bayonet or Edison-screw cap. An iron framework carried two, three or even four batten holders, with appropriate switching, and a polished copper reflector. As one can imagine, this gave a very cosy glow, if not too many Btus. However, owing to the very long and fragile filament, the lives of these lamps were somewhat short.

All these lamps were made under the name of Robertson—a subsidiary of the General Electric Co., I believe. Indeed, a

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† Information based on the 'Statement of Capt. Jackson's claims', which was compiled by Capt. Hamilton for a Royal Navy inquiry into the origins of radio